

Weapons of Choice: The Development of Precision Guided Munitions by Paul G. Gillespie. Tuscaloosa: University of Alabama Press, 2006, 232 pp., \$35.00.

“The weapons of Buck Rogers and Flash Gordon are no longer comic book fantasies. Laser guided and electro-optical (EO) weapons are for real!” So wrote an enthusiastic Air Force officer in the summer of 1971 about the advent of laser and EO precision-guided weapons. Over the course of the next 37 years, precision-guided weapons—laser guided, EO, or inertially aided—would become a mainstay of Air Force combat operations. Unfortunately, the development and evolution of these weapons has received little academic attention with the notable exception of books by David Mets, Michael Rip, and James Hasik. Hence, Paul G. Gillespie’s *Weapons of Choice* is an important book that synthesizes primary and secondary source information to provide an excellent historical discussion of the development and importance of precision-guided munitions from World War I to the present day.

Gillespie’s central thesis is that social factors influenced the development of precision-guided munitions (PGM) prior to Vietnam; however, once proven successful in the Linebacker operations, PGMs played a distinctly deterministic role in influencing national strategy. The conclusions and recommendations argue that current PGM technology should not determine national security policy. The author makes clear that the subject is narrowly focused on “conventional bombs that are interactively guided to terminal impact” (p. 6) with an analytical point of departure of the development of Azon and Aphrodite in World War II (WWII).

The author only briefly covers pre-WWII efforts at precision, yet conveys enough information to provide a foundation for subsequent discussion. His post-WWII discussion will appeal to technological scholars familiar with the writings of Stephen Rosen, who postulated that innovation in wartime is driven by changes in the measure of strategic effectiveness and the short time frame available for innovation. Gillespie’s analysis reinforces these conclusions by showing a need for precision weapons dictated by a change from attacking fielded forces and cities to interdiction against bridges. Gillespie also accurately shows the evolutionary relationship between WWII Azon munitions and Korean Razon and Tarzon munitions based on a shortened time frame for innovation and the lack of technological improvement since WWII.

The author accurately portrays the Eisenhower doctrine of “massive retaliation” after the Korean War as a reverse salient that retarded the development of conventionally guided precision munitions. As a result, the Air Force entered the Vietnam years without the technology, infrastructure, or need for guided weapons. Following a social constructivist line of thought, Gillespie shows how this environment allowed the confluence of engineers, national security policy, and a mid-level military officer (Col Joe Davis) to push the development and procurement of laser-guided bombs (LGB) onto an Air Force organization rediscovering the importance of PGMs. Gillespie’s discussion of the engineering process that led to Paveway LGBs is the best single source this reviewer has seen in either academic

literature or official Air Force publications. Of note, not only does the author trace the development of the winning LGB technology, but also the development and subsequent rejection of competing designs.

The only minor flaw is the sparse discussion of tactical-level input into the development of LGBs. Because the author asserts that social conditions drove the development and success of PGMs from WWII until Vietnam, it is surprising that so little attention is given to tactical-level operators during Vietnam. Gillespie presents a detailed discussion that tactical-level resistance to the complexity of Razon and Tarzon contributed to their demise in Korea but does not carry this same level of detail into the Vietnam era to explain the success of laser-guided PGMs. Multi-aircraft integration (buddy-lasing), laser illumination, and target identification from increased release ranges were just a few of the issues that could have curtailed laser-guided weapons and required tactical-level innovation to overcome. The author provides many examples of tactical aircrew who appreciated laser weapons but relatively little information as to why. Referencing the tactical journal *USAF Weapons Review* would highlight the tremendous amount of tactical input required to ensure that laser-guided munitions would not follow the same fate as Razon and Tarzon. Not only would this addition round out an already compelling discussion of Vietnam, but it would also provide one more societal factor that played such an important role in development of PGMs. In spite of this omission, Gillespie develops a convincing and well-documented argument that social factors, ranging from national security policy to engineers to organizational influences, affected the development of PGMs.

Although the author provides a detailed and comprehensive study of guided munitions prior to and during Vietnam, only 46 of the 178 pages are devoted to explaining how, in the aftermath of Linebacker I and II, precision munitions came to be viewed as deterministically influencing national strategy. Gillespie writes that “arguably during this period [between Vietnam and the Gulf War of 1991] precision guided munitions displaced nuclear bombs and missiles of the cold war as the ‘ultimate weapon’ in the US arsenal, a shift that would lead to a dramatically altered national security policy” (p. 125). This alteration has led to “military force, in the form of precision aerial bombardment . . . used to achieve national objectives that before would have been pursued using exclusively nonmilitary instruments of national power” (p. 149). If a fault can be ascribed to Gillespie, it is the difficulty in proving a deterministic relationship.

While the impact of precision-guided munitions on employment of military force in general and airpower in particular is undeniable, proving that PGMs resulted in an aerial version of *guerre de course* is a daunting task. Gillespie correctly points out that precision weapons decrease the chance of collateral damage and unintended casualties, citing specific combat operations in the former Yugoslavia and Iraq. The major point of contention with citing these combat operations is that Gillespie does not take into account the economic sanctions and diplomatic efforts that preceded military operations. In short, he develops a causal relationship between PGMs and expectations of wartime

casualty aversion, but the assertion that a deterministic relationship between these weapons and an increasing use of airpower at the expense of other forms of national power is not proven in the opinion of this reviewer.

To summarize, the minor issues raised should not detract from the foundational quality of Paul Gillespie's *Weapons of Choice*. Future scholars will undoubtedly use Gillespie's impressive bibliography and methodology to build upon his work as munitions such as GBU-39, EGBU-15, and other guided weapons enter the Air Force inventory. From an operational perspective, it is astonishing to see the similarities between the evolution of guided weapons from World War II to Korea and the development of current munitions from Vietnam-era laser and electro-optical weapons. This book is recommended for Air Force professionals and historians intent on understanding the genesis and development of a truly important class of weapons. Technological scholars will also find value in *Weapons of Choice* because of the author's use of a social constructivist methodology and analysis of the linkage between social factors and the development of military technology in both peace and wartime.

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